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AUTHOR Dickens, Wenda J.; Perry, Raymond P.
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ABSTRACT

The effects of amount of exposure to response/outcome independence and teacher expressiveness on student ratings of the instructor, achievement test performance, and attribution items were studied. University students completed an aptitude test that provided contingent or noncontingent feedback and varied in length (short, medium, or long). All subjects, including a control group who did not complete the aptitude test, then viewed a videotaped lecture in a simulated classroom. Following the lecture, students completed a teacher evaluation, an achievement test, and an attribution questionnaire. The results reveal that contingent students scored higher than noncontingent students on the achievement test, and that students viewing the high expressive lecture performed significantly better than students in the low expressive condition. A priori comparisons of the contingency by expressiveness interaction indicated that the high expressive instructor attenuated the negative effects of noncontingency. After viewing the low expressive lecture, noncontingent subjects had lower performance scores than contingent subjects, but there were no achievement differences between the three contingency conditions (control, contingent, noncontingent) when subjects viewed the high expressive lecture. Instructor expressiveness had the largest impact on the post-lecture measures. It accounted for the greatest amount of the achievement variance, and was the only variable to influence student ratings and attributions. It is concluded that exposure to contingent outcomes had a negative effect on achievement; however, instructor expressiveness had a larger overall effect on student performance. It is suggested that teacher behaviors such as expressiveness may attenuate the effects of exposure to noncontingency. A bibliography is included.

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Learned Helplessness in the Classroom:

Some Good News and Some Bad

Wenda J. Dickens and Raymond P. Perry

University of Manitoba

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Abstract

The pervasiveness of learned helplessness suggests that the model may be useful for examining student performance in a university classroom. The purpose of this study was to investigate the effects of amount of exposure to response/outcome independence and teacher expressiveness on student ratings of the instructor, achievement test performance, and attribution items. University students wrote an aptitude test which provided contingent or noncontingent feedback and varied in length (short, medium, or long). All subjects, including a control group who did not write the aptitude test, then viewed a videotaped lecture in a simulated classroom. Following the lecture, students completed a teacher evaluation, an achievement test, and an attribution questionnaire. The results revealed that contingent students scored higher than noncontingent students on the achievement test, and that students viewing the high expressive lecture performed significantly better than students in the low expressive condition. A priori comparisons of the contingency by expressiveness interaction indicated that the high expressive instructor attenuated the negative effects of noncontingency. After viewing the low expressive lecture, noncontingent subjects had lower performance scores than

contingent subjects, but there were no achievement differences between the three contingency conditions (control, contingent, noncontingent) when subjects viewed the high expressive lecture. Instructor expressiveness had the largest impact on the post lecture measures. It accounted for the greatest amount of the achievement variance, and was the only variable to influence student ratings and attributions. The implications of this study are that exposure to noncontingent outcomes had a negative effect on achievement, however, instructor expressiveness had a larger overall effect on student performance. Teacher behaviors such as expressiveness may attenuate the effects of exposure to noncontingency.

Learned Helplessness in the Classroom: Some Good News and Some Bad

Research with animals and humans has shown that exposure to uncontrollable events and/or noncontingent reinforcement can result in inappropriate generalization to other situations in which control does exist (e.g., Maier & Seligman, 1976; Seligman, 1975). Subsequently the organism has problems learning that control is possible. The term "learned helplessness" refers to this interference in later learning which results from experience with noncontingent reward (response/outcome independence). Since the early animal research the scope of learned helplessness has been generalized to humans to explain reactive depression (Seligman, 1975), the aging process (Langer & Rodin, 1976), environmental stress (Rodin, 1976), and heart disease (Krantz, Glass, & Synder, 1974).

The purpose of the present experiment was to apply learned helplessness to another situation, the university classroom, and to examine the effects of response/outcome independence on students' classroom behaviors. Recently a number of revised models of human learned helplessness have appeared in the literature (Abramson, Seligman, & Teasdale, 1978; Miller & Norman, 1979; Roth, 1980; Wortman & Brehm, 1975). The reformulations attempt to explain some of the

inconsistencies in the results of the human research by acknowledging that attributions and certain moderating variables affect the influence of response/outcome independence.

In her revised model, Roth identified amount of exposure to noncontingent reinforcement as a potential moderator variable. In many of the studies which have reported facilitation effects after exposure to noncontingent outcomes rather than the usual debilitation effects the subjects have had limited exposure to the outcomes. The results of two similar studies (Pittman & Pittman, 1980; Roth & Kubal, 1975) in which amount of exposure was manipulated suggest that greater exposure to response/outcome independence produces greater performance decrements on a subsequent task. When subjects received noncontingent feedback on three or more cognitive problems, they performed more poorly on a subsequent problem solving task than subjects receiving contingent feedback or control subjects who did not receive the initial problems. On the other hand, subjects receiving noncontingent feedback on only one problem performed significantly better on subsequent tasks than contingent or control subjects. As a moderator variable, amount of exposure may have a curvilinear influence. After brief exposure to noncontingent outcomes, subsequent performance is increased, but greater amounts of exposure produces decreased performance relative to contingent and control groups.

Response/outcome relationships may be operating in a number of learning environments in which various moderator variables are present. The classroom represents one of these environments in which to explore the effects on student performance, and introduces the teacher as another potential moderator variable. The teacher often has some control over students' success and failure (i.e., the teacher determines how much material will be covered, decides how much the examinations will cover, decides grading standards, etc.), thus the teacher may be an important classroom variable which mediates the effects of response/outcome noncontingency.

Within the classroom setting, there are at least three sources which may influence student performance. First, students will have various histories of response/outcome contingencies or noncontingencies established through different classroom experiences which may affect their performance; second, the instructor has a number of teaching behaviors which can potentially affect student performance; and three, the students' histories of response/outcome relationships and the teacher behaviors may have interactive effects on performance.

Although learned helplessness researchers have not investigated the influence of noncontingencies on classroom behaviors, Carol Dweck and her associates have used the elementary schoolroom to identify and test learned helplessness

theory (e.g., Diener & Dweck, 1978; Dweck, 1975; Dweck & Bush, 1976; Dweck & Reppucci, 1973). Their research provides some information about students' response to failure - an outcome conceptualized as an aversive event and often used to manipulate response/outcomes noncontingencies in human research. They have identified two types of children, those who give up after failure experiences, and those who persist. Children whose performance deteriorates under failure interpret their failures as an indication of lack of ability. They also believe that their failures are insurmountable and will continue in the future. These students appear to perceive the outcomes as uncontrollable, i.e., the responses and outcomes are noncontingent. The deleterious effects on problem-solving performance appear to be independent of the child's proficiency at the task (Diener & Dweck, 1978; Dweck & Bush, 1976; Dweck & Reppucci, 1973). That is, the child has been able to solve the problems in the past, but fails on similar solvable problems after failure experiences. In contrast, children who persist after failure experiences attribute their failure to lack of effort or motivation and perceive the solution to the problem to be within their control. These children recognize that the response and outcomes are contingent and tend to focus on strategies to overcome the failure rather than trying to identify causes (Diener & Dweck, 1978). The research by Dweck and her associates suggests that different students may have different histories of response/outcome contingency relationships.

Research at the post-secondary level has not demonstrated consistent effects of teaching behaviors on student performance (e.g., McKeachie & Kulik, 1975). This problem is due, in part, to methodological weaknesses, and to the lack of experiments in which teacher characteristics were manipulated. Recently, some researchers investigating teaching effectiveness have directly manipulated instructor expressiveness using physical movement, voice inflection, eye contact, etc. (Perry, Abrami, & Leventhal, 1979; Williams & Ward, 1976). Their results suggest that high expressiveness produces more student achievement than low expressiveness under different classroom conditions. Thus, certain teaching behaviors, such as expressiveness, affect student performance.

Students with different histories of response/outcome relationships may be affected differently by the kinds of behaviors teachers exhibit in the classroom. Some previous research supports this analysis. Dweck, Davidson, Nelson, and Enna (1978) reported that the contingency of the evaluative feedback that teachers gave to children and the attribution the teacher implied when delivering the feedback had a causal effect on children's attributions about their performance. More specifically, when the teacher gave failure feedback that was addressed only to the correctness of the answers and did not attribute the performance to lack of effort, the children were more apt to interpret the cause of

their failure as lack of ability. Children who received failure feedback from the teacher addressed sometimes to correctness and sometimes to nonintellectual aspects of the performance (i.e., neatness, following instructions) tended to view their failures as due to insufficient effort. The type of evaluative feedback children receive through the teacher-student interaction may influence the students' perceptions of the controllability of their performance.

Perry, Leventhal, Abrami, and Dickens (Note 1) directly examined the relationship between a teaching behavior, expressiveness, and student contingency training. Their results provide some support for the hypothesis that certain teacher variables may moderate the effects of response/outcome contingencies. A classroom setting was simulated by showing students videotaped lectures which varied systematically in instructor expressiveness. Outcome contingency was manipulated by giving students either contingent or noncontingent feedback on a 40-item analogies test. A control group was included which did not receive the analogies test. After viewing the videotaped lecture, all students wrote an achievement test based on the lecture. Contingency affected student achievement, but the influence was different under the two expressive conditions. For the low expressive instructor there were no achievement differences between the two contingency groups and the control group. However, under the high expressive instructor, noncontingent students

scored higher than control ($p < .01$) and contingent ($p < .10$) students. While the difference between contingent and noncontingent high expressive subjects was only marginally significant, the results suggest that a teacher behavior such as expressiveness can interact with student reinforcement histories to influence performance.

In summary, the results of these studies provide some empirical support for the existence of the three possible sources of influence which may arise when studying the effects of response/outcome independence on student classroom performance. This experiment was designed to determine if varying amounts of exposure to response/outcome independence and instructor expressiveness would affect university students' attributions and achievement in a simulated classroom context. Students exposed to noncontingent outcomes should perform more poorly than students receiving contingent outcomes, and the greater the exposure to noncontingency the poorer the performance. It was predicted that the high expressive instructor will produce greater achievement in students than the low expressive instructor. Instructor expressiveness may moderate the influence on student outcomes of response/outcome noncontingency and/or length of exposure to response/outcome noncontingency.

Method

Subjects

The subjects were 285 male and female students enrolled in the introductory psychology course at the University of Manitoba who volunteered for this experiment without knowing its purpose. Each student selected an experimental time to which experimental treatments were randomly assigned. All students received credit toward a course requirement for research participation.

Materials

Contingency task. The contingency task was presented to subjects as an aptitude test. The task was composed of three sections, each section having a different type of question. The first section contained verbal analogies questions, the second section was composed of quantitative problems, and section three contained sentence completion problems. All three types of questions were presented in a multiple-choice format with four alternatives per question.

In previous learned helplessness research amount of exposure was manipulated by increasing the number of problems. Similarly, in the present study amount of exposure was vari-

ed by increasing the length of the contingency task. Task length was manipulated by increasing the number of questions in each section. The short version of the contingency task was composed of 25 questions, i.e., 10 verbal analogies, 5 quantitative questions, and 10 sentence completions. The medium length contingency task had twice as many questions per section as the short task, i.e., 20 analogies, 10 quantitative questions, 20 sentence completions, and the long version of the contingency task had three times as many questions as the short, i.e., 30, 15, and 30. Students were given a time limit of half a minute per question in the analogies and sentence completion sections, and one minute per item for the quantitative questions. Thus, the time limits were five minutes per section for the short contingency task, (total time = 15 minutes), 10 minutes per section for the medium (total time = 30 minutes) and 15 minutes for the long task (total time = 45 minutes).

The contingency tasks were identical for subjects in the contingent and noncontingent groups, however, the contingency of the feedback was manipulated with two types of answer sheets developed by the Instructional Research Laboratory at the University of Manitoba. Immediate feedback about each alternative in the form of a "C" or an "X" for a correct or incorrect response was printed invisibly on the answer sheet with the use of a spirit chemical carbon (Effective Learning, Inc.). Marking over an alternative with a

special yellow pen revealed the answer and informed the student if the choice was correct or incorrect.

On the contingent answer sheets only the correct alternative for each question was marked with a "C", and the remaining alternatives were marked with an "X". Students in the contingent groups uncovered a "C" only when they had chosen the correct alternative. The total number of correct answers these students received depended on their ability to select the correct response. In contrast, the number of correct answers that students in the noncontingent conditions received was predetermined by which version of the answer sheet they received.

There were two purposes for devising the answer sheets in this manner. First it was an attempt to model and improve upon the manipulation of solubility on the discrimination tasks often used as the contingency pretreatment task (i.e., Benson & Kennelly, 1976; Hiroto & Seligman, 1975; Roth & Bootzin, 1974; Tennen & Eller, 1977). The answer sheets were similar to the common form of contingency tasks. During a series of training trials a subject makes a response and receives immediate feedback for each trial. Second, this procedure was a manipulation of response contingency which could be presented in a group format and did not have to be administered individually. A group manipulation of response contingency was more appropriate to the simulated classroom than the typical procedure of individual presentation.

Contingency task dependent measures. A questionnaire was designed to measure subjects' attributions about their performance on the contingency task and to check the effectiveness of the manipulations. Students were asked to evaluate their performance on the task in terms of their ability for the aptitude test, the difficulty of the test, how much luck was involved in answering the questions, how hard they tried (effort), how controllable they felt the outcomes were, and how successful they felt. The first four attributions (ability, test difficulty, luck, effort) are the measures traditionally used in previous learned helplessness research. A question about the length of the test was included as a manipulation check along with three other filler questions.

Videotaped lectures. Two color videotaped lectures on the topic of sexrole stereotyping were constructed which differed systematically in instructor expressiveness (low, high). Using a procedure similar to Perry, Abrami, & Leventhal (1979) and Perry, Abrami, Leventhal, and Check (1979) expressiveness was manipulated by varying the following characteristics of the instructor: humor, physical movement, voice inflection, and eye contact. A professor from the psychology department delivered the lectures using prepared notes which were representative of an actual classroom situation. For each expressiveness condition, the professor was asked to role play the behaviors - increasing the frequency

for the high expressiveness condition, and minimizing the frequency of the behaviors for low expressiveness. The instructor controlled the lecture content by delivering both lectures from the same set of notes.

Lecture dependent measures. A 30-item multiple-choice achievement test was used to measure how much students learned from the lecture. The test was constructed to emphasize factual knowledge and comprehension with questions based on the content of the lecture. The students also evaluated the instructor's teaching effectiveness on a 19-item questionnaire. It was composed of two scales: (a) a single item assessing overall teaching ability similar to the item employed by Sullivan and Skanes (1974), and (b) an 18-item teacher rating questionnaire (Pohlmann, 1975). The student ratings measures were included as a manipulation check of the expressiveness variable. A post-lecture attribution questionnaire was designed to assess students' feelings and involvement during the lecture and while writing the test. The seven-item questionnaire focused on the lecture (i.e., were you motivated to attend to the lecture; were you frustrated during the lecture), students' feelings about their performance on the achievement test (i.e., how competent/incompetent did you feel; how calm/aroused did you feel; how helpless/confident did you feel), and the achievement test (i.e., was it important to do well on the test; were you motivated to do well on the test).

Procedure

Upon arriving at the experimental session, students were told that they were participating in a validation of a new psychological test. The purpose of the instructions was to ensure that students' performance on the test was important to them (Miller & Norman, 1979; Roth & Kubal, 1975). At this point students in the experimental conditions were given a folder with the contingency task inside. They were asked to open the folder and to read the general instructions concerning the aptitude test. The instructions included information about the kinds of questions on the test and the time limits for each section. When everyone understood the instructions the students were told to begin the test. At the conclusion of the contingency task, students completed the contingency attribution questionnaire.

The second part of the experiment was the lecture presentation. Subjects in the control conditions who did not write the contingency task began the experiment at this point. All students viewed one of the two videotaped lectures, then completed the student ratings questionnaire, achievement test, and the post-lecture questionnaire. At the conclusion of the experiment, the subjects were fully debriefed as to the true nature of the experiment.

Experimental Design

Length of contingency task (short, medium, long), contingency of the feedback (control, contingent, noncontingent), and expressiveness of the instructor (low, high) were combined to form a $3 \times 3 \times 2$ factorial design. The dependent measures included a post-contingency task questionnaire, and three post-lecture questionnaires: an achievement test, a student ratings questionnaire, and an attribution questionnaire.

Results

Contingency Task Measures

Manipulation check. The students perceived the short form of the contingency task to be significantly shorter than the medium and long forms, $t(163) = 3.29, p < .05$. As well, the medium length task was rated significantly shorter than the long test, $t(163) = 2.09, p < .05$.

Major analyses. The six attribution measures were analyzed using a 2(Contingency) by 3(test length) multivariate analysis of variance (MANOVA). All analyses were calculated using version 6.2 of the MULTIVARIANCE computer program (Finn, 1978). Note that expressiveness is not included as a factor here because students had not viewed the lecture at this point. The means and standard deviations of the six

Insert Table 1 about here

attribution questions are presented in Table 1.

Helmert contrasts were used to analyze the test length effect. This type of contrast compares each group to the mean of the remaining groups and is useful when there is an inherent order in the level of the independent variable

(Pinn, 1978). Because the test length effect has two degrees of freedom and the Helmert contrasts are orthogonal, tests of the test length effect were divided into two single degree of freedom contrasts for ease of interpretation [short-1/2(medium+long), and (medium-long)].

The results of the MANOVA on the six attribution measures revealed a significant test length x contingency interaction for the medium-long contrast, $F(6,182) = 3.18$, $p < .006$. A discriminant function analysis was computed for the significant interaction. The raw and standardized discriminant coefficients, and structure coefficients are pre-

Insert Table 2 about here

sented in Table 2. The discriminant weights are partial coefficients which reflect a variable's contribution to the set of variables in relation to the rest of the set, i.e., they are calculated with the effects of all other variables taken into account (Gabriel, Note 2). The structure coefficients are simple bivariate correlations between the dependent variables and the discriminant function indicating the relationship of each variable to the function.

The standardized coefficients and the structure coefficients in Table 2 reveal that effort, control, and test difficulty were related to the differences between the four groups (medium-contingent, medium-noncontingent, long-con-

tingent, long-noncontingent). The mean centroids listed in Table 2 show that the attributions of subjects in the medium-contingent and the long-noncontingent groups were similar to each other, and the attributions of the medium-noncontingent and long-contingent groups were similar. Students receiving contingent feedback on the medium task and those receiving noncontingent feedback on the long task felt that the task was hard, that they had tried hard, but did not have much control over their performance. On the other hand, contingent students who completed the long task and medium-noncontingent students believed that the task was easier, that they had not tried as hard, that they had more control over their performance.

Lecture Measures

There were three sets of variables which were measured after the lecture: student ratings of the instructor; achievement test score, and attributions about the lecture and achievement test. Control subjects who were not exposed to the contingency task but who saw the lecture conditions also responded to these measures. With the addition of the expressiveness variable and the control subjects, the design became a contingency (control, contingent, noncontingent) x task length (short, medium, long) x expressiveness (low, high) between groups factorial.

Manipulation check. The students rated the low expressive instructor significantly lower than the high expressive instructor on both rating scales. The expressiveness main effect on the overall rating was highly significant, $F(1,267) = 269.70$, accounting for 49 percent of the variance. The results were similar for the Pohlmann scale, $F(1,267) = 651.68$, $\eta^2 = .70$.

Achievement test. The results of the contingency x test length x expressiveness ANOVA are presented in Table 3, and the means and standard deviations for the achievement test are presented in Table 4. Significant main effects oc-

Insert Table 3 and 4 about here

curred for contingency, $F(2,267) = 3.92$, $p < .02$, $\eta^2 = .02$, and expressiveness, $F(1,267) = 51.95$, $p < .001$, $\eta^2 = .15$. Students exposed to contingent feedback scored higher on the achievement test than noncontingent students. The performance of control subjects was not significantly different from either contingent or noncontingent subjects (contingent $x = 20.67$, control $x = 19.30$, and noncontingent $x = 18.37$). Students viewing the high expressive instructor ($x = 21.77$) performed better on the test than students viewing the low expressive instructor ($x = 17.70$).

Because a significant contingency x expressiveness interaction was predicted, a priori planned comparisons were

computed to probe the interaction. A graph of the interaction is presented in Figure 1. As predicted, noncontingent

 Insert Figure 1 about here

students ($x = 16.29$) scored lower on the achievement test than contingent students ($x = 19.14$) in the low expressive instructor condition, $t(267) = 2.97$, $p < .001$. Control subjects did not perform significantly different from either noncontingent or contingent subjects. None of the contingency groups differed significantly at high expressiveness. The high expressive group (HE) scored higher than the low expressive group (LE) at the control condition, $t(267) = 3.71$, $p < .001$, ($HE = 21.41$, $LE = 17.66$); the contingent condition, $t(267) = 3.23$, $p < .001$, ($HE = 22.18$, $LE = 19.14$); and the noncontingent condition, $t(267) = 5.51$, $p < .001$ ($HE = 21.63$, $LE = 16.29$).

The contingency $\times$ test length interaction was probed, but since no specific a priori comparisons had been hypothesized, all meaningful pairwise comparisons were calculated. None of the comparisons reached significance.

The remaining significant effect was the test length $\times$ expressiveness interaction, $F(2,267) = 4.42$, $p < .01$, accounting for 2 percent of the total variance. Comparisons between means revealed significant achievement differences between low and high expressive conditions at each of the

three test lengths: short, $t(267) = 3.05$, $p < .05$, medium, $t(267) = 3.06$, $p < .05$, long, $t(267) = 6.56$, $p < .05$. No other comparisons were significant.

Post-lecture attributions. After completing the student ratings questionnaire and the achievement test, students responded on a five-point scale to seven attribution questions. The attributions were analyzed by a MANOVA, and all significant effects were followed up with discriminant function analyses.

The multivariate expressiveness main effect was significant, $F(7,243) = 29.13$, $p < .001$. The results of the dis-

Insert Table 5 about here

criminant function analysis are presented in Table 5. From the magnitude of the standardized and structure coefficients it is evident that all the attributions except calm/aroused and test importance are contributing to the difference between the low and high expressiveness condition. High expressive students are feeling more motivated to attend to the lecture, feeling less frustrated during the lecture, more competent, less helpless, and more motivated to do well on the achievement test than were students in the low expressive condition. Expressiveness had a significant impact on the students' attributions and feelings about the lecture.

Discussion

The present experiment investigated the response/outcome contingency issue within a simulated university classroom. Three general conclusions can be drawn from the results. One, the contingency task was an effective manipulation of response/outcome contingency; two, exposure to response/outcome independence had an effect on students' subsequent classroom performance; and three, the teacher behavior of expressiveness moderates the response/outcome contingency effects on performance.

Students' attributions about their performance were measured immediately after the contingency task to determine the effectiveness of the manipulation. The attributions were significantly affected by an interaction of contingency with task length. Since the contingency task involves a manipulation of control over reinforcement, noncontingent subjects should perceive they have less control over their performance than contingent subjects. This relationship was true for the long contingency task, but it was reversed for the medium length task, suggesting that amount of exposure to the contingency task has a moderating effect on students' attributions. It appears that the medium-contingent subjects' perceptions about the task had more of an influence

than the experimental manipulation of contingency. Both the medium-contingent and the long-noncontingent groups are presenting a profile of a person who perceives responses and outcomes to be independent. The students feel they have little control, little ability, and the task is difficult. In other words they are taking little personal responsibility for their performance.

Response/Outcome Relationships and Student Outcomes

Contingency and expressiveness both influenced student achievement. The fact that noncontingent subjects scored lower than contingent subjects provides further support for the adequacy of the contingency manipulation. Although, the influence of contingency was pervasive enough to affect performance on a subsequent task, the effect was small. Contingency only accounted for two percent of the total achievement test variance. There was no contingency effect on the student ratings or attributions about lecture performance. The impact of contingency on student outcome measures appears to be small.

Expressiveness had a greater influence on the post lecture measures, accounting for the largest portion of the total variance. Due to the nature of the dependent measures, one would expect that the instructor would have the largest impact on student outcomes. The achievement test was specific to the lecture, and the attribution questionnaire

asked opinions about the lecture and achievement test, making teacher behavior more salient to the lecture measures than contingency.

As predicted, instructor expressiveness moderated the effect of contingency on student achievement but again, the effect size was small. When students were exposed to a high expressive instructor after receiving noncontingent training, they did as well as the contingent feedback students. That is, exposure to response/outcome independence did not adversely affect achievement when the expressive instructor is involved. On the other hand, noncontingent subjects viewing the low expressive lecture scored significantly lower than contingent subjects in the same lecture condition. The low expressive instructor teaching in a dull and boring fashion may be compounding the effects of noncontingency. When asked about the lecture, students observing the low expressive lecture said they felt more frustrated and less motivated than those viewing the high expressive lecture.

The dynamics of the situation may be that response/outcome independence produces a certain negative set within the student. When presented with a dull and boring lecture, the student already in a negative state becomes frustrated and loses any motivation to attend to the lecture, and thus does not do well on the achievement test. But, if the student is exposed to a more expressive lecturer while in the negative state, frustration is not compounded with a bad lecture and

motivation to attend is not lessened. Thus, as long as instructors do not lecture in a low expressive manner, student histories of response/outcome independence will not have an adverse effect on achievement.

Amount of exposure to noncontingent outcomes had a small effect on student achievement. There was a significant test length by expressiveness interaction, but this was the result of achievement differences between low expressive and high expressive conditions at short, medium, and long exposures. The tendency was for increasing lengths of exposure to accentuate the differences between low and high expressiveness (i.e., the largest achievement difference was between low and high expressiveness at the long test length).

If viewed within a context of a whole university course, the total amount of exposure that was manipulated in this study was very brief. The design was a single exposure which varied in time duration (15 minutes to 45 minutes). Perhaps greater exposure to response/outcome independence over repeated sessions would have more of an impact on student performance. Thus, the amount of exposure manipulation may represent a conservative estimate of the effect, with greater exposure like that found in the classroom having more pronounced effects. Unlike other investigations examining the influence of amount of exposure, another variable (instructor expressiveness) was interposed between the expo-

sure to response/outcome independence and the measuring of student performance. Expressiveness had a large influence on all the post-lecture measures, possibly masking the effects of the test length manipulation. Therefore, one should not conclude that amount of exposure has no effect on subsequent performance, rather the manipulation of exposure used in the study was a conservative estimate.

Implications

Histories of exposure to response/outcome independence may have a negative effect on students' classroom performance. Within the limitations of the laboratory setting, this experiment demonstrated that exposure to noncontingency decreased achievement performance. Students exposed to noncontingent outcomes will likely do more poorly in future classroom situations than students not experiencing noncontingency. Within a classroom, however, the effects of noncontingency are not independent of the teacher. Certain teacher behaviors, such as expressiveness, may be able to attenuate the negative effects. When teachers lecture in a highly expressive manner, they could increase the performance of students with histories of exposure to response/outcome independence. Dweck (1975) has shown that the performance of helpless children could be improved if they were taught to attribute their failure performance to lack of effort rather than lack of ability. High expressive teachers

may improve the performance of noncontingent students by allowing the student to focus on the good teacher rather than on their own lack of performance.

This study exposed university students, who probably have histories of response/outcome dependence, to a relatively brief amount of noncontingency and still found that contingency influenced achievement. As the result of laboratory manipulation, noncontingency has a significant but small effect on performance. However, students who have histories of response/outcome independence over the years may be debilitated to a greater degree. Future research should focus on measuring students' actual perceptions of control within the classroom to identify those students with histories of noncontingency.

The results of the present experiment might suggest that amount of exposure to noncontingency had a negligible effect on classroom performance. However, within the context of a university term, the total exposure in the laboratory was brief. Repeated exposures over time might be a more powerful manipulation and would be more typical of classroom dynamics. There are ethical problems with using this procedure in a laboratory. More and more exposures to response/outcome independence could generalize to situations outside of the laboratory. An alternative strategy would be to use actual classes and measure the influence of students' perceptions of control of classroom performance over time and determine if the impact changes.

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TABLE 1

Contingency x Task Length Interaction

Attribution Means & Standard Deviations (in brackets)

SHORT TASK LENGTH		
	CONTINGENT	NONCONTINGENT
Attribution Measures		
Task Difficulty	5.55 (1.97)	5.82 (2.61)
Ability	5.70 (2.23)	4.94 (2.16)
Luck	4.45 (2.15)	4.65 (2.16)
Effort	7.27 (1.99)	6.62 (2.01)
Control	7.00 (2.33)	5.41 (2.28)
Success	5.21 (2.23)	4.58 (2.75)
	n=33	n=34
MEDIUM TASK LENGTH		
	CONTINGENT	NONCONTINGENT
Task Difficulty	5.85 (1.76)	5.84 (2.30)
Ability	5.59 (1.88)	5.74 (2.59)
Luck	3.65 (2.01)	5.16 (2.58)
Effort	7.44 (1.89)	6.52 (2.69)
Control	6.18 (2.53)	6.36 (2.71)
Success	5.03 (2.07)	4.68 (2.65)
	n=34	n=31
LONG TASK LENGTH		
	CONTINGENT	NONCONTINGENT
Task Difficulty	5.64 (1.52)	6.79 (1.95)
Ability	5.82 (1.57)	5.61 (2.15)
Luck	4.00 (1.73)	4.68 (2.37)
Effort	6.18 (2.21)	7.71 (2.09)
Control	7.18 (1.76)	6.21 (2.59)
Success	4.76 (1.89)	4.79 (2.51)
	n=33	n=28

a) Attributions were rated on a 10-point scale, with higher scores indicating greater attribution

TABLE 2

Discriminant Analysis for Task Length x Contingency

VARIABLE	RAW COEFFICIENT	STANDARDIZED COEFFICIENT	STRUCTURE COEFFICIENT
Ability	-.107	-.227	-.118
Effort	.368	.795	.731
Control	-.196	-.467	-.295
Task Difficulty	.208	.426	.372
Success	.118	.279	.104
Luck	-.174	-.378	-.241

Mean Centroids

	MEDIUM LENGTH	LONG LENGTH
CONTINGENT	2.104	1.283
NONCONTINGENT	1.408	2.183

TABLE 3
Contingency x Task Length x Expressiveness ANOVA
for Achievement Test Scores

<u>SOURCE</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	<u>η^2</u>
Contingency (C)	2	89.35	3.92	.02	.02
Expressive (E)	1	1151.06	51.95	.001	.15
Task Length (TL)	2	<1.0	<1.0		
C x E	2	33.90	1.53	.22	
C x TL	4	15.63	<1.0		
E x TL	2	98.03	4.42	.01	.02
C x E x TL	4	6.26	<1.0		
Error	267	22.16			

TABLE 4
Achievement Test Means and Standard Deviations

Contingency x Task Length x Expressiveness

SHORT TASK LENGTH

	CONTROL	CONTINGENT	NONCONTINGENT
Low Expressiveness	18.76 (5.92) n=17	19.53 (5.00) n=17	16.56 (5.81) n=18
High Expressiveness	20.50 (3.96) n=14	21.29 (6.29) n=17	21.56 (3.42) n=16

MEDIUM TASK LENGTH

	CONTROL	CONTINGENT	NONCONTINGENT
Low Expressiveness	17.94 (4.97) n=16	20.53 (3.68) n=17	15.88 (4.44) n=16
High Expressiveness	21.15 (3.08) n=13	21.94 (3.65) n=17	20.25 (5.11) n=16

LONG TASK LENGTH

	CONTROL	CONTINGENT	NONCONTINGENT
Low Expressiveness	16.29 (4.16) n=17	17.25 (6.26) n=16	16.40 (4.56) n=15
High Expressiveness	22.75 (5.05) n=12	23.29 (3.24) n=17	23.29 (3.52) n=14

TABLE 5

Discriminant Analysis for Expressive Main Effect

Post-Lecture Attributions

VARIABLE	RAW COEFFICIENT	STANDARDIZED COEFFICIENT	STRUCTURE COEFFICIENT
Motv-Lecture	-.696	-.706	-.900
Frustr-Lecture	-.431	-.515	-.755
Competent	-.056	-.061	-.532
Calm	.234	.242	-.150
Helpless	.153	.157	.513
Test-Impt	-.195	-.212	.203
Motv-Test	.105	.112	.465

Mean Centroids

LOW EXPRESSIVENESS -3.89

HIGH EXPRESSIVENESS -.211

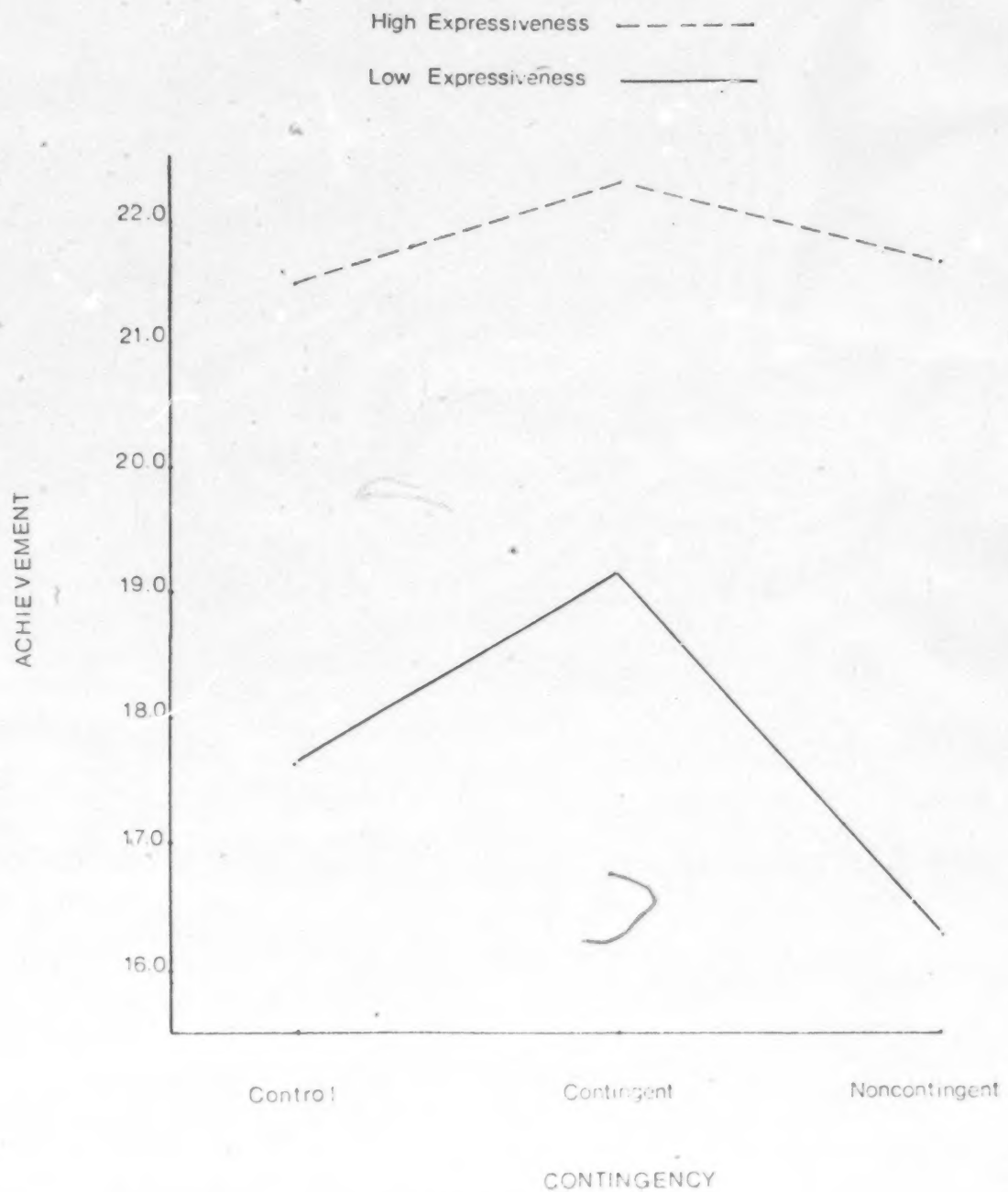


Figure 1: Expressiveness x Contingency Interaction on Achievement